

Econ 212 Time Series Analysis

10:30-11:50 am TTH.

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Office Hours: Thursday 2-4pm or by appointment.

The main aim of this course is to develop the knowledge of econometric techniques that are useful in the analysis of financial markets and macroeconomic phenomena. The course will cover mainly time series techniques and their applications to the study of macroeconomics and finance. While the details of the econometric techniques will be discussed extensively, especially in the first part of the course, the course also focuses on the applications of these techniques to the study of actual data from financial markets and for various macroeconomic variables.

The course is divided in three parts. The first will cover some basic econometric techniques that will be used extensively in the last two parts. The second part will look at some topics in financial economics and their econometric analysis. The third part will consider macroeconomic applications. The details of the topics are as follows.

Part I: Time series analysis.

- 1.1 The general linear model in a time series context and the OLS estimator.
- 1.2 Deviations from standard assumptions: autocorrelation: Auto Regressive and Moving Average models.
- 1.3 Deviations from standard assumptions: heteroscedasticity: ARCH and GARCH models.
- 1.4 Univariate time series models: Auto Regressive and Moving Average models.
- 1.5 Non-stationary models: random walks and unit roots.
- 1.6 Co-integration analysis

Part II: Finance|

- 2.1 Predictability of excess returns and tests of market efficiency.
- 2.2 Models of risk and return: the CAPM: theory and empirical evidence.
- 2.3 Models of risk and return: the Intertemporal CAPM: theory and empirical evidence.
- 2.4 Volatility of asset prices.

Part III: Applied macroeconomics

- 3.1 Dynamic linear models.
- 3.2 Vector AutoRegressive (VAR) models and their use in forecasting.
- 3.3 Granger causality.

Readings

Most details on the econometric techniques can be found in:

Johnston J. and DiNardo J.: *Econometric Methods*, McGraw Hill, Fourth Edition, 1997.

In particular, the material covered in Part I will be taken from chapters 6, 7. Much of the material covered in Part III is from chapters 8 and 9. The first 5 chapters constitute a good introduction to the techniques students are assumed to be familiar with.

The material for Part II is taken from two chapters in a book and some specialist articles. In particular, the material on returns predictability and market efficiency, as well as the material on the static CAPM is covered in chapters 2 and 5 of:

Campbell, J.Y., Lo. A.W. and MacKinlay A.C.: *The econometrics of financial markets*, Princeton University Press, 1997.

In addition, the following two articles will be used:

Fama, E. and J. MacBeth (1973): "Risk, Return and Equilibrium: Empirical Tests", *Journal of Political Economy*, Vol. 71, pp 607-636.

Gibbons, M. and W. Ferson (1985): "Testing Asset Pricing Models with Changing Expectations and Unobservable Market Portfolio", *Journal of Financial Economics*, Vol.14, pp. 217-236.

Shiller, R.J. (1980): "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *The American Economic Review*, Vol. 71, No. 3. (Jun., 1981), pp. 421-436.

Note that, for both the chapters and the articles mentioned, the most technical parts can be skipped and are not required readings. Details on which parts of the readings are essential will be given during the lectures.

Rescheduling:

Unfortunately it will be necessary to reschedule some of the lectures. The details are as follows:

Tuesday April 17th: the lecture scheduled for that day will be held on Friday April 20th.

Tuesday May 1st: the lecture scheduled for that day will be held on Friday May 4th.